Sapido
One for all

Gigabit Switch

24 Port Green Gigabit Switch

HG-3224

Networking

User Manual v1.0.0

FCC Statement

Federal Communication Commission Interference Statement This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.
These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

1. The device complies with Part 15 of the FCC rules. Operation is subject to the following conditions:
2. This device may not cause harmful interference, and this device must accept any interference received, including interference that may cause undesired operation.
3. FCC RF Radiation Exposure Statement: The equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.
4. This Transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.
5. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user authority to operate the equipment.

IMPORTANT NOTE

FCC Radiation Exposure Statement:
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance20cm between the radiator & your body.

CE Mark Warning

This is a class B product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

National Restrictions

Frequency range - 2400.0 - 2483.5 MHz

Country	Country	Reason/remark
Bulgaria	none	General authorization required for outdoor use and public service.
France	Outdoor use limited to 10 mW e.i.r.p. within the band 2454-2483.5 MHz	Military Radiolocation use. Refarming of the 2.4 GHz band has been ongoing in recent years to allow current relaxed regulation. Full implementation planned 2012.
Italy	none	If used outside of own premises, general authorization is required.
Luxembourg	none	General authorization required for network and service supply (not for spectrum).
Norway	Implemented	This subsection does not apply for the geographical area within a radius of 20 km from the centre of Ny-Ålesund.
Russian Federation	none	Only for indoor applications.

Note: Please don't use the product outdoors in France

CE Statement of Conformity

Our product has been tested in typical configuration by Ecom Sertech Corp and was found to comply with the essential requirement of "Council Directive on the Approximation of the Laws of the Member Sates relating to Electromagnetic Compatibility" (89/336/EEC; 92/31/EEC; 93/68/EEC). The Declaration of Conformity can be found at the Sapido regional website. www.sapidotech.de

CE Information of Disposal

T[redacted]ctric and electronic equipment or unit which is labeled with crossed-out wheeled bin may not be disposed of with household waste. This mark is based on European Directive 2002/96/EC (for Waste Electric and Electronic Equipment=WEEE).

Please take it to the designated collection facilities. We will ensure the proper recycling, reuse and other forms of recovery of WEEE. WEEE has the potential effects on the environment and human health as a result of the presence of hazardous substances. You can contribute to eliminate these effects by your cooperation.

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1 Getting to know the Switch

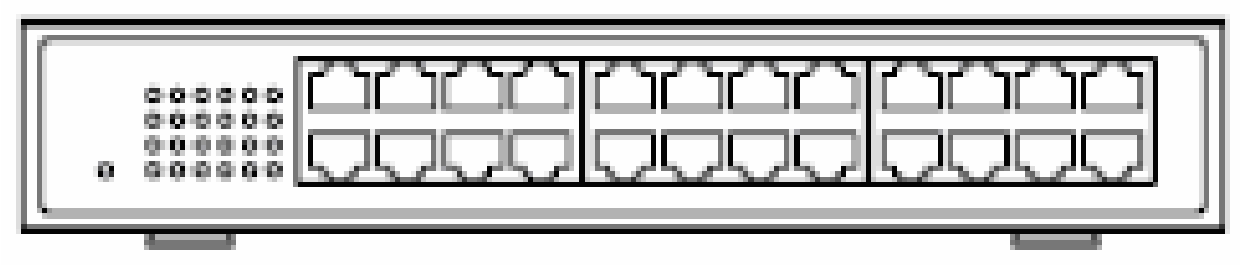
1.1 Introduction

The Gigabit Ethernet Switch is equipped with 24 Gigabit copper ports and each port provides a max speed of 2000Mbps and a Full-Duplex, Collision Free Bandwidth. It's a multi-speed, versatile network device that combines Gigabit, Fast Ethernet, and Ethernet ports in a single device. This device meets RoHS compliance. It is power-saving with Green Ethernet technology.

1.2 Key Features

- Supports Auto-Negotiation on each TP port
- Supports 9216byte maximum packet length
- Supports Green Ethernet
  - Link-On and Cable Length Power Saving
  - Link-Down Power Saving
  - IEEE 802.3az Energy Efficient Ethernet (EEE) supported
- Provides Store-and-Forward switching scheme
- Supports Auto-MDI/MDI-X function
- Supports IEEE 802.3x Flow-Control for Full-Duplex operation
- Back-Pressure function supports for Half-Duplex operation
- Non-Blocking Performance Improves Access to Network Resources
- 8K-entry lookup MAC address table

1.3 The Front Panel



1.3.1 Network Ports

The Switch is equipped with eight RJ-45 ports that support network speeds of 10/100/1000Mbps.

1.3.2 Cabling

1000Mbps - To transmit at 1000Mbps requires Cat.5 TP cabling that has all Four (4) twisted-pair wires connected in RJ45 connector.

100Mbps - To transmit at 100Mbps requires Cat. 5 cabling.

10Mbps - When transmitting at 10Mbps, Cat. 3, 4 or 5 TP cabling with RJ-45 sockets can be used.

Port Type	Cable Type	Connector
1000BASE-T	Cat.5 TP	RJ-45
100BASE-TX	Cat.5 TP	RJ-45
10BASE-T	Cat. 3, 4 or 5 TP	RJ-45

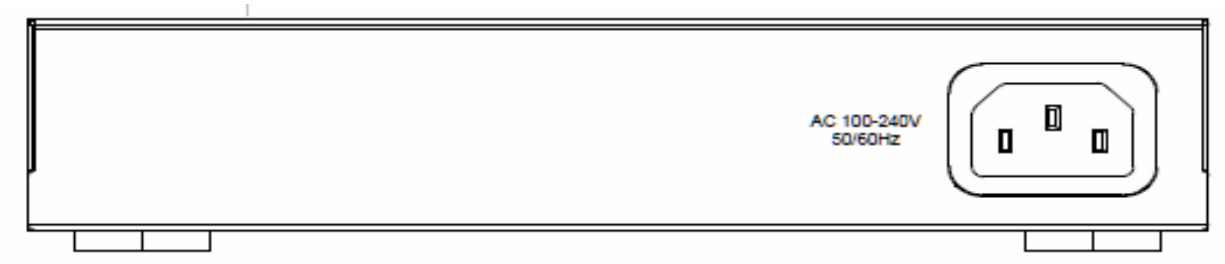
Note: Cat. 5 TP cable recommended whenever installing new cabling.

1.3.3 LEDs status

Information about the Switch's activity is displayed through its LEDs, shown as below.

LED	Function	Color	Status	Description
Power x1	Power indication and loop status	**Green**	On	Power is being applied to this product
		Red	Blinking 120ms	Loop is detected
Port x 24	Ethernet port activity and loop status	**Orange**	On	Connected at 1000Mbps
			Blinking 30ms	1000Mbps Tx/Rx activity or loop detected
		Green	On	Connected at 10/100Mbps
			Blinking 30ms	10/100Mbps Tx/Rx activity

1.4 The Rear Panel



1.4.1 Power Connector

The power connector is designed to be used with the power adapter included in the product package.

2 Useful Tips

2.1 Prior to Installation

Before installing the switch and connecting network devices, it is important to plan the network's layout. Things you should consider include:

- **Dedicated Bandwidth:** File servers and other high-traffic hardware will have better and improved performance if they have their own dedicated 10Mbps, 100Mbps, or 1000Mbps bandwidth.
- **Full-Duplex:** Determine which devices support Full-Duplex connections.
- **Fast Ethernet & Gigabit Ethernet:** Make sure rules for cable lengths and categories are followed. 100BASE-TX and 1000BASE-T have the same rules for cable and distance.
- **Auto-Negotiation:** Devices with different speeds may be easily swapped when the other end of the cable is fixed to a port with Auto-Negotiation.

2.2 Half- and Full-Duplex

The switch supports both Half- and Full-Duplex modes for 10BASE-T and 100BASE-TX. But the 1000BASE-T only supports Full-Duplex mode.

- **In Half-Duplex mode:** Data cannot be transmitted and received at the same time. Attached devices must finish transmitting data before they can receive data.
- **In Full-Duplex mode:** Data can be transmitted and received at the same time.

However:

- Full-Duplex transmission is only possible between two devices with a dedicated link (e.g., Switch-Switch, Switch-PC)
- Both devices must have Full-Duplex capability
- Both devices must be set to Full-Duplex (e.g. Auto-Negotiation – Auto-Negotiation, Non-Auto-Negotiation to Non-Auto-Negotiation)

The 10/100/1000Mbps ports on the switch detect and set the line's operating mode by using their Auto-Negotiation function.

2.3 Auto-Negotiation

Every 10/100/1000Mbps port on the switch has a built-in "Auto-Negotiation" function. This technology allows each port to automatically sense and set the best possible speed as soon as a connection with another network device is established (usually at Power “On” or Reset).

Evaluating Auto-Negotiation Capability:

if attached device is:	The switch will automatically set its TP ports to operate at:
1000Mbps with Auto-Negotiation	2000Mbps (1000BASE-T, Full-Duplex) Note: Almost all 1000Mbps devices only operate in Full-Duplex mode.

100Mbps no Auto-Negotiation	100Mbps (100BASE-TX, Half-Duplex)
100Mbps with Auto-Negotiation	200Mbps (100BASE-TX, Full-Duplex)
10Mbps no Auto-Negotiation	10Mbps (10BASE-T, Half-Duplex)
10Mbps with Auto-Negotiation	20Mbps (10BASE-T, Full-Duplex)

Note: If the attached device is set to a fixed mode (ex: Forced Full-Duplex) it will not operate as an Auto-Negotiation device.

3 PRODUCT SPECIFICATIONS

Item	Specification
Key Components	
Chipset	Realtek RTL8389L 28-port Gigabit switch controller Realtek RTL8218 8-port Gigabit PHY x3
Ethernet Interfaces	
Standards	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet IEEE 802.3x Flow Control
Ethernet Port	24 x 10Base-T/100Base-TX/1000Base-T Gigabit Ethernet ports Supports Auto-MDI/MIDX and Auto-Negotiation Supports 10Base-T: Category 3、4 or 5 TP Supports 100Base-TX/1000Base-T : Category 5、5e TP or higher
Transfer Mode	Store-and-Forward
Packet Buffer Size	3.5Mbits
MAC Address Table	16K-entry lookup table
Bandwidth	10BASE-T: 10/20Mbps (half/full duplex) 100BASE-TX: 100/200Mbps (half/full duplex) 1000BASE-T: 2000Mbps (full duplex)
Forwarding/Filtering Rate	14881 packets/second per port @ 10Mbps maximum 148810 packets/second per port @ 100Mbps maximum 1488095 packets/second per port@1000Mbps maximum
Switch Fabric	48Gbps
Jumbo Frame	Supports maximum 9216bytes packet length
Green Ethernet	Link-On and Cable Length Power Saving Link-Down Power Saving IEEE 802.3az Energy Efficient Ethernet (EEE)
Miscellaneous	
LED Indicators	Power/Loop x 1 Port Link/Act/Loop x 24
Operation Requirement	Operating Temp. 攝氏 0 to 40 度(華氏 32 to 104 度) Storage Temp. 攝氏-20 to 70 度(華氏-4 to 158) Operating Humidity 10% to 85% Non-Condensing Storage Humidity 5% to 90% Non-Condensing

Power Supply	AC100~240V / 50~60Hz universal input
Dimensions	250(L) x 148.8(W) x 43(H) mm